

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1 (original): A method for manufacturing a magnetic write element for use in a data recording system, comprising the steps of:

- a. providing a first pole having a first and a second end and constructed of a magnetic material;
- b. depositing a dielectric write gap material layer over said first pole, said dielectric write gap material layer extending to said first end of said first pole and being formed so as to leave a portion said first pole uncovered at said second end of said first pole to provide a back-gap;
- c. depositing a mask material onto said seed layer;
- d. patterning a coil pattern in said mask material using a photolithographic process;
- e. selectively removing a portion of said patterned mask material to produce a recess in said mask material in said pattern of said coil;
- f. forming a trench in said mask material adjacent said coil pattern, said trench having a depth that is shallower than that of said coil pattern recess;
- g. baking said mask material;
- h. depositing an electrically conductive coil into said coil pattern recess;
- i. removing said mask material;
- j. depositing a coil insulation layer;
- k. curing said coil insulation layer; and
- l. forming a second pole constructed of a magnetic material, said second pole contacting said first pole at said back-gap, and being separated from said first pole at said first end by said write gap material layer.

Claim 2 (original): A method as recited in claim 1 wherein said electrically conductive coil is electroplated and further comprising the steps of:

- a. before depositing said mask material, depositing a thin, electrically conductive seed layer;
- b. after depositing said electrically conductive coil, removing said seed layer.

Claim 3 (original): A method as recited in claim 1 wherein said coil material and said seed layer are copper.

Claim 4 (original): A method as recited in claim 1 wherein said trench extends around said coil patterned recess in said mask.

Claim 5 (original): A method as recited in claim 1 further comprising two or more of said trenches.

Claim 6 (original): A method as recited in claim 1 wherein said trench has a width of 0.3 to 0.5 microns.

Claim 7 (original): A method as recited in claim 5 wherein said trenches are spaced roughly 0.5 microns apart.

Claim 8 (original): A method as recited in claim 1 wherein said trench is spaced at least 0.8 microns from the outermost portion of said coil patterned recess in said mask material.

Claim 9 (original): A method as recited in claim 1 wherein said coil has a pitch of at least 0.4 microns.

Claim 10 (original): A method as recited in claim 1 wherein said coil patterned recess in said mask material extends through said mask material, and wherein said trench does not extend through said mask material.

Claim 11 (original): A magnetic write element constructed according to the process of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

Claim 12 (original): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

Claim 13 (new): A magnetic write element constructed according to the process of claim 1.

Claim 14 (new): A magnetic write element constructed according to the process of claim 2.

Claim 15 (new): A magnetic write element constructed according to the process of claim 3.

Claim 16 (new): A magnetic write element constructed according to the process of claim 4.

Claim 17 (new): A magnetic write element constructed according to the process of claim 5.

Claim 18 (new): A magnetic write element constructed according to the process of claim 6.

Claim 19 (new): A magnetic write element constructed according to the process of claim 7.

Claim 20 (new): A magnetic write element constructed according to the process of claim 8.

Claim 21 (new): A magnetic write element constructed according to the process of claim 9

Claim 22 (new): A magnetic write element constructed according to the process of claim 10.

Claim 23 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 1.

Claim 24 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 2.

Claim 25 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;

- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 3.

Claim 26 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 4.

Claim 27 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 5.

Claim 28 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;

- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 6.

Claim 29 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 7.

Claim 30 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 8.

Claim 31 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 9.

Claim 32 (new): A data storage and retrieval system for use with a computer, the system comprising:

- a. a housing;
- b. a motor connected with said housing;
- c. a spindle driven by said motor;
- d. a magnetic disk, support by said spindle for rotation thereabout;
- e. an actuator connected with said housing;
- f. a head supported by said actuator proximal to a surface of said disk;
- g. a magnetic read element disposed on said head;
- h. a magnetic write element disposed on said head, said write element being constructed by the method of claim 10.